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REMARKS

The Applicant appreciates the thorough review of the application by the Examiner.

Reconsideration and allowance are requested.

No new matter has been added by the amendments. No new issues are raised by the amendments.

The drawings have been changed as suggested by the Examiner.

Claims 2 and 14-17 have been changed as suggested by the Examiner.

The amendments are formal in nature.

Reconsideration and allowance are requested.

Claims 1-3 are patentable under 35 U.S.C. 102(b) over Innocenti et al. (EP 0 892 244)

Claims 1-3 distinguish the invention from Innocenti.

Claim 1 recites a covering over the optical fiber. Innocenti has no covering over the optical fiber. Therefore, Innocenti does not anticipate Claim 1.

Claim 2 specifically points out wherein the tank is a cylindrical tank, and wherein the optical fiber is wound in spaced loops in a first helical direction along the cylindrical tank, and subsequently are wound in spaced loops in a second helical direction along the cylindrical tank. Innocenti has no cylindrical tanks wherein the optical fiber is wound in spaced loops in a first helical direction along the cylindrical tank, and subsequently are wound in spaced loops in a second helical direction along the cylindrical tank. Therefore, Innocenti does not anticipate Claim 2

Claim 3 recites the tank is a tank liner, and the covering comprises a filament winding in a filament wound composite gas storage tank. Innocenti does not have a tank liner, and the covering

comprising a filament winding in a filament wound composite gas storage tank. Therefore, Innocenti does not anticipate Claim 3.

Because each and every element of the claimed invention is not present in the prior art, claims 1-3 are patentable over Innocenti under 35 U.S.C. 102(b).

Claims 4-20 are patentable under 35 U.S.C. 103(a)
over Innocenti in view of Jones (U.S. 4,880,970)

Claims 4-20 distinguish the invention from Innocenti and Jones.

Nothing in the references would have suggested their combination in a manner proposed by the Examiner. Jones does not mention a tank or a vessel or a volume change and is not from the art to which the subject matter of the invention is related.

Claim 4 specifically adds to the tank of Claim 1 that the optical filter crosses over obstructions. A combination of Jones with Innocenti did not arise from the prior art and was made using the present invention as a guide, which is proscribed in Patent Law.

Claim 5 specifically adds to Claims 1 and 4 the optical fiber is wound helically in first spaced coils over the tank in a first direction and is wound helically in second spaced coils over the tank and over the first spaced coils in a second direction, and wherein the first spaced coils form the obstructions and the second spaced coils form the bends where the second spaced coils cross over the first spaced coils as pinch points. Neither Innocenti nor Jones has the optical fiber is wound helically in first spaced coils over the tank in a first direction and is wound helically in second spaced coils over the tank and over the first spaced coils in a second direction, and wherein the first spaced coils form the obstructions and the second spaced coils form the bends where the second spaced coils cross over the first spaced coils as pinch points. Nothing in Innocenti or Jones would have suggested combining those two references in the manner proposed by the Examiner.

Claim 6 specifically adds to Claims 1 and 5 wherein the first and second spaced coils are secured to the tank. Nothing in Innocenti or Jones would have suggested wherein the first and second spaced coils are secured to the tank.

Claim 7 specifically adds to Claims 1 and 5 wherein the bends and the pinch points are secured to the tank with a flexible adhesive. Nothing in Innocenti or Jones would have suggested wherein the bends and the pinch points are secured to the tank with a flexible adhesive.

Claim 8 specifically points out providing an optical fiber on the tank; providing obstructions on the tank; providing pinch points in the optical fiber by crossing the optical fiber over the obstructions; securing the entire optical fiber or at least the pinch points to the tank; providing and exposing ends on the optical fiber for receiving light and outputting light; and covering the optical fiber and the tank. Nothing in Innocenti or Jones would have suggested providing an optical fiber on the tank; providing obstructions on the tank; providing pinch points in the optical fiber by crossing the optical fiber over the obstructions; securing the entire optical fiber or at least the pinch points to the tank; providing and exposing ends on the optical fiber for receiving light and outputting light; and covering the optical fiber and the tank.

Claim 9 specifically adds to Claim 8 providing the tank comprises providing a cylindrical tank liner, wherein the providing an optical fiber and obstructions on the tank comprises winding the optical fiber in first spaced helical convolutions in a first direction along the cylindrical tank liner and winding the optical fiber in second spaced helical convolutions in a second direction along the cylindrical tank liner and forming the pinch points in the second spaced helical convolutions where they cross over the first helical convolutions of the optical fiber. Nothing in Innocenti or Jones would have suggested providing the tank comprises providing a cylindrical tank liner, wherein the providing an optical fiber and obstructions on the tank comprises winding the optical fiber in first spaced helical convolutions in a first direction along the cylindrical tank liner and winding the optical fiber in second spaced helical convolutions in a second direction along the cylindrical tank

liner and forming the pinch points in the second spaced helical convolutions where they cross over the first helical convolutions of the optical fiber.

Claim 10 specifically adds to Claims 1 and 9 wherein the covering comprises covering the optical fibers with an isolator layer. Nothing in Innocenti or Jones would have suggested wherein the covering comprises covering the optical fibers with an isolator layer.

Claim 11 specifically adds to Claims 1 and 10 the covering further comprises providing filament windings over the isolator layer of the optical fiber and over the tank liner for supporting internal pressures within the tank liner. Nothing in Innocenti or Jones would have suggested the covering further comprises providing filament windings over the isolator layer of the optical fiber and over the tank liner for supporting internal pressures within the tank liner.

Claim 12 specifically adds to Claims 1 and 9 securing comprises coating the optical fiber with a settable adhesive as the optical fiber is wound on the tank. Nothing in Innocenti or Jones would have suggested comprises coating the optical fiber with a settable adhesive as the optical fiber is wound on the tank.

Claim 13 specifically adds to Claims 1 and 9 securing comprises coating crossover pinch points with a flexible settable adhesive. Nothing in Innocenti or Jones would have suggested securing comprises coating crossover pinch points with a flexible settable adhesive.

Claim 14 specifically adds to Claims 1 and 11 increasing bending in the pinch points by resisting the increasing pressure with the filament windings, and observing transmitted light attenuation in the light sensor related to expansion of the tank liner and increasing bending of the pinch points. Nothing in Innocenti or Jones would have suggested increasing bending in the pinch points by resisting the increasing pressure with the filament windings, and observing transmitted light attenuation in the light sensor related to expansion of the tank liner and increasing bending of the pinch points.

Claim 15 specifically points out a tank having an inlet and outlet, an optical fiber secured to an outer surface of the tank and having opposite ends for receiving and outputting light, the opposite

ends being fixed near the inlet and outlet for connecting respectively to a light source and to a light sensor as the tank is filled with gas under pressure, the optical fiber crossing on the outer surface of the tank and forming bends and pinch points at the crossings, and a composite material overwrap covering the optical fiber and for withstanding internal pressure within the tank and resisting expansion of the tank. Nothing in Innocenti or Jones would have suggested a tank having an inlet and outlet, an optical fiber secured to an outer surface of the tank and having opposite ends for receiving and outputting light, the opposite ends being fixed near the inlet and outlet for connecting respectively to a light source and to a light sensor as the tank is filled with gas under pressure, the optical fiber crossing on the outer surface of the tank and forming bends and pinch points at the crossings, and a composite material overwrap covering the optical fiber and for withstanding internal pressure within the tank and resisting expansion of the tank.

Claim 16 specifically adds to Claims 1 and 15 optical couplings connected to the ends of the fibers and secured to the inlet and outlet of the tank liner. Nothing in Innocenti or Jones would have suggested optical couplings connected to the ends of the fibers and secured to the inlet and outlet of the tank liner.

Claim 17 specifically adds to Claims 1 and 15 thin adhesive connecting the optical fiber to the outer surface of the tank. Nothing in Innocenti or Jones would have suggested thin adhesive connecting the optical fiber to the outer surface of the tank.

Claim 18 specifically adds to Claims 1 and 17 relatively flexible adhesive at the optical fiber bends (pinch points). Nothing in Innocenti or Jones would have suggested relatively flexible adhesive at the optical fiber bends (pinch points).

Claims 19 and 20 distinguish the invention from the references in the same manner as Claim 15.

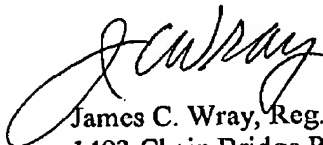
Thus, for these reasons, the rejection of Claims 4-20 under 35 U.S.C 103(a) as being unpatentable over Innocenti in view of Jones is improper and should be withdrawn.

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CONCLUSION

Reconsideration and allowance of all claims are respectfully requested.

Respectfully,



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